

43, 48, 51, 56 and 58 have been rewritten to delete redundant material therefrom and to make various clarifying editorial changes therein.

Upon entry of this set of First Preliminary Amendments, Claims 1-6, 8-11, 13-15, 17-18, 22-24, 27-32, 40-45, 48-51, 54-58 and 62 are in the application. For the Examiner's convenience, a clean copy of these claims, grouped by their dependency from the two independent Claims 1 and 62, is set forth hereinafter as Appendix I.

Invention Synopsis

The present invention relates to an improved process for preparing highly esterified polyol polyesters via an interesterification reaction between (a) a polyol containing more than four esterifiable hydroxy groups, and (b) a fatty-acid lower-alkyl ester, i.e., a fatty acid ester of an easily removable alcohol such as methanol. This interesterification reaction is generally carried out in a heterogeneous (e.g. solvent-free) reaction mixture from which the easily removable alcohol, produced by reaction of the polyol and the fatty-acid lower-alkyl ester, can be removed as the reaction proceeds.

In certain of its embodiments, the present invention relates to an improvement in a particular process of the foregoing type. Such an improvement is brought about by utilizing one or more of six separate new process features as set forth in twice-amended Claim 1 presented herewith in this First Preliminary Amendment. These features include use of the polyol reactant in a certain particulate solid form; removal of unreacted polyol, catalyst and soap at certain stages of the reaction; and utilization of certain types of reaction conditions.

A particularly preferred combination of new process features involves a) the use of an initial reaction stage carried out under backmixing conditions to maintain a certain level of partially esterified polyol within the reaction mixture, and b) the use of "plug flow" reaction conditions in the final stages of the interesterification reaction. This particularly preferred combination of backmixing in the initial reaction stages followed by plug-flow conditions in the final reaction stages is the subject of new independent Claim 62 as submitted herewith in this First Preliminary Amendment.

The several process features which are set forth in the amended claims presented herein in order to define preferred embodiments of the improved polyol polyester preparation process of the present invention result in a number of advantages. Such advantages include improved reaction speed and efficiency, reduced/minimized formation of unwanted by-products, reduced/minimized need to remove excess reactants and catalyst from the reaction mixture, and reduced/minimized energy and equipment needs with improved process flexibility.

Art Rejection From Parent Case

The claims in the parent of the instant File Wrapper Continuation application had been finally rejected under 35 USC §103 over Volpenhein (U.S. 4,517,360) in view of Osipow et al (U.S. 3,644,333). The Examiner had contended that the various new process features of Applicants' improved process would have been obvious modifications of the interesterification reaction procedures disclosed in these two patents.

At a May 28, 1992 PTO interview with Examiners White and Brown, the relevance of these two references to Applicants' claimed invention was discussed. Particular attention was focused on two specific new features of Applicants' improved process -- the use of backmixing conditions in the initial stage of the interesterification reaction and the use of "plug flow" conditions in the final stages of the interesterification reaction after the degree of esterification of the polyol reaches 50%.

At the interview, inventor Patrick J. Corrigan outlined the rationale for, and the advantages provided by, utilization of this particular combination of backmixing and plug flow reaction conditions. It was noted that neither the Volpenhein nor Osipow et al patents specifically disclosed or exemplified use of either of these types of procedures. It was furthermore noted that neither of these patents discloses any reaction procedures which would inherently involve this particular combination of backmixing and plug flow reaction conditions.

As indicated hereinbefore, a process utilizing the especially advantageous combination of backmixing and plug flow reaction conditions has been described in new independent Claim 62 presented with this First Preliminary Amendment. A number of the claims from the parent case have

now also been amended to depend from this new independent Claim 62. Accordingly, for the reasons discussed herein and at the May 28, 1992 interview, it is submitted that rejection of this new Claim 62 (and the claims now dependent therefrom) under 35 USC §103 over the Volpenhein and Osipow et al patents would be improper.

Also presented as part of this First Preliminary Amendment is a revised version of original Claim 1. Several of the process features which were originally set forth as alternatives in previous Claim 1 versions have now been incorporated into the preamble of this new Claim 1. The embodiment of the present invention which is represented by this new Claim 1 is thus now defined by reciting a number of specific process features. Such features relate to certain reaction conditions as well as a number of additional interesterification process features involving type, form, concentration and removal of the several reactants, catalysts, emulsifiers and intermediate reaction products present in the reaction mixture used in the improved polyol polyester preparation process herein. The relationship of these several process features to the reaction procedures disclosed in the Volpenhein and Osipow et al references was discussed at length in Applicants' January 13, 1992 Amendment Under 37 CFR 1.111. It is submitted for the reasons set forth in that Amendment that rejection of newly amended Claim 1 (and the claims now dependent therefrom) under 35 USC §103 over Volpenhein and Osipow et al would also be improper.

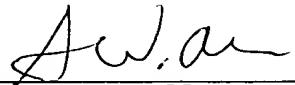
Conclusions

By this First Preliminary Amendment, Applicants have made an earnest effort to place their application in proper form and to distinguish their invention as embodied in the newly amended claims from the prior art which had been applied in the parent application. WHEREFORE, entry of the amendments presented, consideration of the remarks set forth herein, and

allowance of Claims 1-6, 8-11, 13-15, 17-18, 22-24, 27-32, 40-45, 48-51, 54-58 and 62 as presently written are respectfully requested.

Respectfully submitted,

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